

APPLICATION
FOR
UNITED STATES LETTERS PATENT

TITLE: CAMOUFLAGE DENIM PRODUCTS

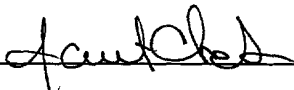
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CAMOUFLAGE DENIM PRODUCTS

Cross Reference To Related Applications

5 This application claims the benefit of the U.S. Provisional
Application No. 60/170,827, filed on December 14, 1999.

Background

10 Denim jeans are basically differentiated by material color.
Although there are many variations on these themes such as boot
cut, sandblasted, and baggie, the denim industry still
manufacturers very few styles of denim.

15 Summary

20 The present system teaches using a laser to prepare a new
kind of material which includes unique patterns, such as
camouflage patterns, thereon.

20 In one embodiment, a camouflage pattern is defined, and a
computer file is formed that is indicative of the pattern. The
computer file is used to control a laser beam to draw a pattern
on a textile material. The pattern has lighter and darker areas,
in the shape of the pattern, based on the computer file.

Brief Description of the Drawings

These and other aspects of the invention will be described in detail with reference to the accompanying drawings, wherein:

Figure 1 shows a basic camouflage pattern;

Figure 2 shows a block diagram of a hardware setup for forming the patterns, and transferring them to apparel; and

Figure 3 shows a basic flowchart of operation.

Detailed Description

In the present system, lasers are used to create different designs on denim. This can be done in either a continuous process where the laser scribes patterns on a roll of denim fabric, or in a unit process where a laser scribes patterns on individual clothing items - e.g. individual denim jeans or shirts. The laser is used to scribe graphic images on fabrics in a unique way, which allows for individual laser scans to be drawn at different energy intensities along any single line, and from line to line.

Each of the lines as drawn can abrade the denim, and thereby change the look of the denim where it contacts the denim. This enables forming designs on the denim, e.g., by scribing lines, or

defining areas whose colors are to be changed, and scribing changes to the material within those areas.

The present invention describes using a laser to change the look of a textile material, e.g. a denim garment. A camouflage pattern is formed on denim products using the techniques described in US Patent numbers 6,002,099 and 5,916,461 which allow the user to paint the image to be lased on the computer screen.

A camouflage pattern can be created using this technique. A sample camouflage pattern is shown in Figure 1. The program operates using the hardware shown in Figure 2. A user interface 200 allows the user the option of using different colors 202, 204; e.g ten colors; more preferably 5-20 colors; to draw a pattern. Each color is assigned a user-defined power (or duty cycle) level of driving a laser 225. This different power causes a different look on the actual denim product being lased 230.

The process may follow the flowchart of Figure 3. At 300, a pattern is designed using connected irregular shapes that replicate the camouflage pattern. The objects drawn should represent a camouflage type design with random shapes and colors.

A series of irregular shapes can be drawn by the designer at 300. Alternatively, the program can postulate some shapes using

a random number generator, seeded by some cue from the user. In this latter way, each garment becomes unique and different than each other garment.

Once the pattern is designed, the user can assign each color
5 to a laser power level, or duty cycle level at 305. Every color should represent a different power (or duty cycle). When the material is lased with this pattern, the lased product attains the appearance of a camouflaged look.

10 If the material is indigo denim, the different shapes have different levels of white or blue appearance due the action of the laser scribing the different shapes at different power (or duty cycle) levels. Therefore, when looking at the garment, some objects will appear more intense while others will be less intense. This provides more of a feathered type appearance.
15 However, it is important to note that the colors given a lower power (or duty cycle) must be high enough to the point where the EDPUT (energy density per unit time) is sufficient to allow the "image" to change to the material, or be visible after washing.

20 The areas of the pattern which use a color representing zero power (or duty cycle) will appear indigo (the natural denim color), and the areas of the pattern which use a color representing the maximum power (or duty cycle) will appear white

or close to white. The areas of the pattern which use a color in between these two levels will appear between these two colors and at different color intensities. This effect simulates a grayscale image.

5 Since the laser can scribe such a camouflage pattern continuously along a web of denim fabric or on individual units such as jeans, the process to apply such a unique design may be cost effective. Further, since the lazied camouflage pattern looks particularly good on the denim after a conventional home wash, it is possible to eliminate one of the costly steps in the production of denim jeans - the enzyme wash or stone wash process.

10 While the present disclosure describes a camouflaged pattern, this is just exemplary of the patterns that can be formed. The basic idea is to form a pattern that is totally unique to the one denim product, and a pattern that no one else will have on their jeans. The patterns are not limited to camouflage, but may also include other irregular shapes, in multiple colors and in single colors. The shapes can be rounded, 15 polygonal, or made in any other geometric shape. Cow-type spots, polka dots, irregular strips, plaid patterns, and others are contemplated.

5 also be formed. In addition, other materials besides denim can be used. All such modifications are intended to be encompassed within the following claims, in which: